

### REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-2, 4-9, 12-20, 23-30, and 33-40 are currently pending, Claims 1, 2, 5, 6, 8, 9, 12, 13, 15-16, 18-19, 23, 26-27, 29-30, 33, 35, and 38-39 having been amended. The changes and additions to the claims do not add new matter and are supported by the originally filed specification, for example, on page 28, line 19 to page 29, line 10.

In the outstanding Office Action, Claims 1, 2, 4, 7, 12-14, 17, 20, 23-25, 28, 33-34, 37, and 40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sugar et al. (U.S. 7,194,237, hereafter “Sugar”) in view of Pautler et al. (U.S. Pub. No. 2003/0185309, hereafter “Pautler”) and Onggosanusi et al. (U.S. Pub. No. 2004/0076224, hereafter “Onggosanusi”); and Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39 were objected to as being dependent upon a rejected base claim, but containing allowable subject matter.

Applicants thank the examiner for the indication of allowable subject matter. In view of this indication, Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39 have been amended to be independent form while incorporating features similar to those of their respective base claim. Applicants note that any features not incorporated from the previously presented independent claims should not affect the scope of allowable subject matter in Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39, because the omitted features were added to the independent claims after the claims were originally considered to have allowable subject matter in the Office Action of May 28, 2008. Furthermore, Applicants note that Claims 5, 8, 15, and 18 were not explicitly indicated as having allowable subject matter in the original Office Action of May 28, 2008, but were indicated as having allowable subject matter in the Office Action of December 11, 2009 after the enablement rejection of Claims 5,

8, 15, and 18 was withdrawn. Therefore, Applicants submit that the present amendment to Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39, which includes features similar to combinations of original Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39 and their original respective independent claims is appropriate and does not affect the allowability of these claims. Therefore, amended and now independent Claims 5, 6, 8, 9, 15-16, 18-19, 26-27, 29-30, 35, and 38-39 should be allowed.

With respect to the rejection of Claim 1 under 35 U.S.C. §103(a), Applicants respectfully submit that the clarifying amendment to Claim 1 overcomes this ground of rejection. Amended Claim 1 recites, *inter alia*,

a channel state estimating means for estimating a state of each communication channel from received signals received by the L antennas to output information of channel estimation, and including a channel information accumulation unit configured to accumulate the information of channel estimation as information of channel state for a predetermined interval;...

a proper reception weight generating means for generating proper reception weights by using the condition of received power from the received power estimation unit, information of channel state from the channel information accumulation unit and the processed feedback information from the feedback-delay compensating means, wherein for the generation of the proper reception weights, the information of channel state from the channel information accumulation unit corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated.

Applicants submit that Sugar, Pautler, and Onggosanusi fail to disclose or suggest at least these features.

Sugar is directed to a system and method for multiple-input multiple-output (MIMO) radio communication. Fig. 1 of Sugar describes a system 10 that includes a first radio communication device 100 having N antennas which communicates with a second radio communication system 200 having M antennas. Sugar describes that device 100 has

knowledge of a channel state between the two devices, which is characterized by a channel response matrix  $H$ . The device 100 uses a feedback technique to send this knowledge to the device 200. Fig. 5 of Sugar shows a receiver section 120B which includes a channel estimator 455 for providing channel estimation computations.

Applicants note that the Office Action had relied on Onggosanusi to disclose “a proper reception weight generating means for generating proper reception weights by using the information of the channel state and the processes feedback information from the feedback delay compensating means (means 425) in order to properly demodulate and recover/reproduce the original transmitted signal.” (See Office Action, at page 6).

Onggosanusi is directed to multipath interference-resistant receivers for closed-loop transmit diversity in CDMA systems. Fig. 2b of Onggosanusi shows a transmitter 105 with multiple antennas 110 and a receiver 115 with multiple antennas 120. Onggosanusi describes that the receiver 115 may provide to the transmitter 105 information such as channel state information or even weighting factors that can be used by the transmitter 105 to adjust its transmission (see para. [0031]).

However, the Office Action did not cite to a specific element or portion of Sugar, Pautler, or Onggosanusi as explicitly reciting “a channel information accumulation unit configured to accumulate the information of channel estimation as information of channel state for a predetermined interval,” as defined in Claim 1. The Office Action also does not cite to Sugar, Pautler, or Onggosanusi as explicitly disclosing that information of channel state from the channel information accumulation unit is used in the generation of proper reception weights as defined in Claim 1. Instead, the Office Action states the following on page 4:

One of ordinary skill in the art would recognize that it is well-known in the art to accumulate channel information over a period of time *to obtain the average*

***channel information***, which is a more reliable channel parameter than the instantaneous channel information to better and more accurately generate the reception weights. (Emphasis added).

However, amended Claim 1 clarifies that “for the generation of the proper reception weights, ***the information of channel state from the channel information accumulation unit corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated.***” Therefore, the information of channel state from the channel information accumulation unit used for generating the reception weights is not “average channel information” as was interpreted by the examiner as being well-known in the art. On the contrary, the information of channel state from the channel information accumulation unit used to generate the reception weights corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated. Applicants submit that according to this feature of Claim 1, it becomes possible to reduce inconsistency between the transmission weights and reception weights due to feedback-delay (see also specification, at page 28, lines 28-31). Applicants submit that such an advantage is not achieved if average channel information is used to generate the reception weights.

Applicants further submit that it is not well-known in the art that “for the generation of the proper reception weights, the information of channel state from the channel information accumulation unit corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated,” as defined by amended Claim 1.

Additionally, while the Office Action has not clearly indicated that it took Official Notice in the above statement on page 4 shown above, the MPEP §2144.03 states the following:

“Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be “capable of such instant and unquestionable demonstration as to defy dispute” (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961)).”

“It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. **For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.**” (Emphasis Added).

Applicants submit that “for the generation of the proper reception weights, the information of channel state from the channel information accumulation unit corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated,” is an example of a technical fact in the area of esoteric technology or specific knowledge of the prior art that must always be supported by citation to some reference work recognized as standard in the pertinent art, as provided in the MPEP.

Therefore, Applicants submit that the examiner must submit documentary evidence in a subsequent Office Action to support the assertion that the feature of “for the generation of the proper reception weights, the information of channel state from the channel information accumulation unit corresponds to a channel state estimated at a time when the transmission weights currently being used at the transmitter were calculated” is well-known in the art.

Therefore, Applicants submit that all of the features of amended Claim 1 are not obvious in view of Sugar, Pautler, or Onggosanusi, either alone or in proper combination.

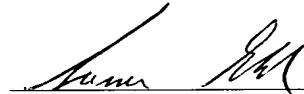
Therefore, Applicants respectfully submit that amended Claim 1 patentably distinguishes over Sugar, Pautler, and Onggosanusi, either alone or in proper combination.

Amended independent Claims 2, 12, 13, 23, and 33 recite features similar to those of amended Claim 1 discussed above. Therefore, Applicants respectfully submit that amended Claims 2, 12, 13, 23, and 33 (and all associated dependent claims) patentably distinguish over Sugar, Pautler, and Onggosanusi, either alone or in proper combination.

Consequently, in light of the above discussion and in view of the present amendment, the outstanding grounds for rejection are believed to have been overcome. The present application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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